



Serial No. 09/996,189
60130-1291; 00MRA0622

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Sidney Edward Fisher

Serial No.: 09/996,189

Examiner: Rodriguez, Pamela

Filed: November 28, 2001

Group Art Unit: 3683

Title: ACTUATOR

Commissioner for Patents
P.O. Box 1450
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APPEAL BRIEF

Dear Sir:

Appellant submits this Appeal Brief pursuant to the Notice of Appeal filed December 15, 2004. Enclosed is a check for the appeal brief fee. Any additional fees or credits may be charged or applied to Deposit Account No. 50-1482 in the name of Carlson, Gaskey & Olds.

REAL PARTY IN INTEREST

The real party in interest is Meritor Light Vehicle Systems (UK) Limited, assignee of the present invention.

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RELATED APPEALS AND INTERFERENCES

There are no prior or pending appeals, interferences or judicial proceedings related to this appeal, or which may directly affect or may be directly affected by, or have a bearing on, the Board's decision in this appeal.

STATUS OF CLAIMS

Claims 1.5,8,11,12,14,15,17,19 and 21-24 are pending, rejected, and appealed. Claims 6,9,10,13,18 and 20 are withdrawn from consideration.

STATUS OF AMENDMENTS

All amendments have been entered.

SUMMARY OF CLAIMED SUBJECT MATTER

Vehicle door lock actuators are required to provide an output position corresponding to an unlocked and locked condition of an associated door. The lock actuator includes a motor that drives a cam for moving an output device between the locked, unlocked and superlocked conditions. Many actuators require that a motor move in a counterclockwise and clockwise manner to move the latch mechanism between locked and unlocked positions.

The present invention relates to an actuator for an automobile door that includes a motor rotatable in a single direction for moving an output member from a first position to a second position and back to the first position.

Figures 1 and 2 illustrate a lock actuator 10 according to the present invention including a motor 30 supported within a recess 26 of a housing 12. The motor 30 includes a shaft 31 that drives an output pinion 32 through a centrifugal clutch 34. (Paragraph 20).

A cam wheel 18 is driven by the output pinion 32 in a clockwise direction. The cam wheel 18 includes a recess 40 having a profile. A cam follower 52 is disposed within the recess 40 and follows the profile of the recess 40 during rotation of the cam wheel 18. The cam follower 52 is attached to an output member 20 such that movement of the cam follower 52 within the recess 40 causes a reciprocating movement of the output member 20 between a first position and a second position. (Paragraph 31).

Referring to Figures 7 and 8, the recess 40 includes an outer wall 70 and an inner wall 80 that together form the recess 40 within which the cam follower 52 moves. A spring 24 biases the cam follower 52 against the outer wall 70. The outer wall 70 includes radial stops 71A, 71B, 72A and 72B that limit outward movement of the cam follower 52. The outer wall 70 is split into three distinct portions 73, 74 and 75. Portion 73 is spirally curved beginning at stop 71A at a circumferential position C1 and ending at circumferential position C2. Portion 74 is radially orientated between portions 73 and 75. Portion 75 begins at the end of portion 73 and is an outward spiral curve ending at circumferential position C3. The outer wall 70 also includes

portions 77, 78 and 79. Portions 77,78 and 79 are disposed between stops 72A and 71B. (Paragraphs 36-39).

Referring to Figures 3 and 4, the cam follower 52 is shown within the recess 40 at a stop 72A. The motor 30 is energized to rotate the cam wheel 18 in a clockwise direction such that portions 77,78 and 79 progressively move past the cam follower 52. When the motor 30 is actuated, the cam wheel 18 will rotate clockwise. Once the motor 30 stops, the cam wheel 18 will snap into one of the positions shown in Figure 3 or Figure 4. The movement of the cam wheel 18 is allowed because once the motor 30 stops, the centrifugal clutch 34 disengages to allow free movement of the cam wheel 18. The spring 24 provides the biasing force required to snap the cam wheel 18 into one of the positions. Movement of the cam wheel 18 between the positions in Figures 3 and 4 results in movement of the output member 20 between a first output position and a second output position.

Rotation of the cam wheel 18 in a single direction provides the movement of the output member 20 between the positions illustrated in Figures 3 and 4. The cam wheel 18 will move into the position shown in Figure 3 in which the cam follower 52 is disposed against stop 72A when the motor stops along surfaces 77 or 75 (Figure 8). If the cam wheel 18 is positioned such that the cam follower 52 is positioned along surfaces 73 or 79 (Figure 7), when the motor 30 stops, the cam follower 52 will snap against the stop 71B and move the cam wheel 18 and thereby the output member 20 into the position shown in Figure 4. (Paragraph 49)

Referring to Figures 5 and 6, manual actuation of the output member 20 provides for movement of the cam wheel 18 by engagement between the cam follower 52 and the inner

surface 80. The inner surface 80 includes complimentary surfaces such that the cam follower 52 moves the cam wheel 18 until engaging a stop 81C in one instance as shown in Figure 5. Further, the cam follower 52 may also engage the inner surface 80 at a stop 81D (Figure 8) as is shown in Figure 6. (Paragraph 53).

Accordingly, the recess 40 in combination with the spring biased cam follower 52 provides a detent to control the position of the cam wheel 18 in both a powered condition where the motor 30 is rotating the cam wheel 18 and in a non-powered condition where the output member 20 is actuated manually. Movement of the output element 20 between a first position and a second position and then back to the first position is therefore provided by the motor 30 moving in a single direction. (Paragraphs 6-8).

Independent claim 1 recites an output member 20 connected to a cam follower 52, wherein powered rotation of the cam 18 causes the cam follower 52 to be radially displaced relative to a cam axis A to provide first and second output positions of the output member 20. Claim 1 further requires that the cam 18 have a profile 40 that includes a radial stop 71,72, which, in conjunction with the cam follower 52, act as a detent so that the cam follower 52 is capable of controlling a position of the cam 18 and that a motor 30 for providing powered rotation of the cam 18 is powered in a single direction to move the output member 20 from the first output position to the second output position and is driven in the single direction to move the output member 20 from the second output position to the first output position.

Independent claim 24 recites a kit of parts for assembly to provide an actuator including a motor 30, a pair of cams 18 each having a different profile, a cam follower 52 and an output

member 20. Claim 24 requires that one of the cams 18 be assembled into the actuator and that the motor 20 is in driving connection with the installed cam 18. Claim 24 further requires that assembled cam 18 be rotatable about a cam axis A. Further, claim 24 requires that the assembled cam 18 cause the cam follower 52 to be radially displaced relative to the cam axis A to provide first and second output positions of the output member 20, wherein the cam profile 40 includes a radial stop 71,72 which, in conjunction with the cam follower 52, acts as a detent so that the cam follower 52 is capable of controlling the position of the assembled cam 18. Additionally required in claim 24 is that the motor 30 is powered in a single direction to move the output member 20 from the first output position to the second output position and is driven in the single direction to move the output member 20 from the second output position to the first output position.

GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

(1) Claims 1-5, 7,8,11,12,14,15,17, 19, and 21-24 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,649,726 to Rogers Jr. et al ("Rogers") in view of U.S. Patent No. 6,114,821 to Kachouh. ("Kachouh").

ARGUMENT

(1) Obviousness Rejection Over Rogers as Modified by Kachouh

Claims 1-5, 7,8,11,12,14,15,17, 19, and 21-24 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Rogers in view of Kachouh.

When it is necessary to select elements from different references in order to form the claimed invention, there must be some suggestion or motivation to make the selection. Obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention, absent some teaching, suggestion, or incentive supporting the combination. The extent to which such suggestion must be explicit in, or referred from, the references, is decided on the facts of each application in light of the prior art and its relationship to the claimed invention. It is impermissible to engage in a hindsight reconstruction of the claimed invention, using appellant's structure as a template and selecting elements from the references to fill the gaps. The references themselves must provide some teaching whereby appellant's combination would have been obvious. In re Gorman, 933 F.2d 982, 986, 18 USPQ2d 1885, 1888 (Fed. Cir. 1991).

Claim 1

Claim 1 requires a motor that is powered in a single direction to move an output member from a first output position to a second output position and is driven in the single direction to move the output member from the second output position to the first output position.

Examiner admits that Rogers does not disclose, suggest, or teach all of the features of claim 1 and relies on the teachings of Kachouh to modify Rogers. The Examiner argues that modification of Rogers to include a motor rotatable in a single direction as taught by Kachouh would have been obvious to one of ordinary skill. The motivation being to provide a simpler less costly motor arrangement and simpler design (Final Office action dated September 15, 2004, page 4, 1st full paragraph).

Appellant disagrees, no matter how much simpler the design may be, it must still operate. The use in Rogers of a unidirectional motor would render Rogers inoperable.

Rogers includes a motor (310) that drives a gear wheel (318) through a worm gear (312). The Rogers gear wheel (318) includes stops (350) and (352). The motor (310) moves the gear wheel (318) in a counterclockwise direction (316) (Figure 8 of Rogers) until a stud (336) of an output member (174) hits the perpendicular surface (350) causing the motor (310) to stall. (Col 9, lines 39-42). Stall means that the motor (310) is not able to move the gear wheel (318) past the surface (350). This position in Rogers provides a locked position and requires that the gear wheel (318) be moved in an opposite direction, i.e. clockwise (314) to move to an unlocked position. (Col 9, lines 43-46). As is illustrated and described in Rogers (Figure 8 and Col 9, lines 38-45), Rogers requires a reversible motor to move between locked and unlocked positions because the stops (350) and (352) prevent further rotational movement causing the motor (310) to stall. A motor that moves in only a single direction would stall at one of the perpendicular surfaces provided by the stops (350) and (352) and be prevented from further movement, rendering the device inoperable.

For this reason, the proposed modification would change a principle operation of Rogers and clearly render the Roger's device unusable for it's intended purpose. Any proposed modification cannot render the prior art unsatisfactory for its intended purpose and cannot change the principle of operation of the base reference. "If the proposed modification would render the prior art invention unsatisfactory for its intended purpose, then there can be no suggestion or motivation to make the proposed modification." MPEP § 2143.02. Including a single direction motor in Rogers according to the proposed modification would render Rogers inoperable because the motor would stall at the stops and would be prevented from further movement. Accordingly, there can be no motivation or suggestion to make the proposed modification of Rogers in view of Kachouh.

Further, claim 1 requires a motor powered in a single direction to move an output member from a first output position to a second output position and is driven in the single direction to move the output member from the second output position to the first output position. Examiner states that this is taught by Kachouh. Appellant disagrees. It is unclear how Kachouh operates as stated by the Examiner and how Kachouh discloses or suggests a unidirectional motor that teaches the missing limitations of claim 1.

In the final office action Examiner states that unidirectional operation of the Kachouh motor is disclosed in the description at column 3, lines 1-38 wherein the motor turns "on" and "off" in a single direction to move the lever 4 to either the locked or unlocked position. It is clear that in Kachouh a switching element (4) is moved between a first position I and a second position II. However, it is not clear how the motor (1) performs this operation. Examiner asserts

that this is disclosed generally in column 3, lines 1-38. However, this passage includes no clear explanation of what direction the motor (1) moves a servo-drive element (3).

Kachouh is directed toward the use of a single switch (7) to provide information indicative of the position of a servo-drive element (3). It is not clear from the teaching of Kachouh how the servo-element (3) moves. In fact, it appears from Figure 1 in Kachouh that a bi-directional motor is required for operation. Figure 1 illustrates a locked position where a journal (9) is trapped within a pocket. As appreciated, because the journal (9) is fixed to the switching element (4) and the switching element (4) is fixed to move about the pivot (5), the only possible way for the journal (9) to move out of the pocket is for the servo-drive element (3) to move in a direction opposite the direction required to move the journal (9) into that pocket. Further, Kachouh states that "*two end positions are reached in this example by servo-drive 3 running against journal 9 on the operating lever 4 (blocking mode; evaluation of the increased power consumption of the electric drive motor or time-out)*". (Col 4, lines 32-36). As appreciated, a "*blocking mode*" as described here must mean that some positive stop (such as the pocket in the servo-element (3) Figure 1) prevents further movement of the servo-element (3). If the servo-element (3) did move as proposed by Examiner, there could be no "*blocking mode*". The only way for the journal (9) to move from the position shown in Figure 1 is for the motor (1) to move in a direction opposite to the direction in which it entered or to manually move the operating lever (4). Either instance does not disclose or suggest the limitations required by claim 1.

Further, referring to Figures 2 and 3 of Kachouh, the illustrated structure does not support the conclusion that the motor (1) and servo-drive (3) cooperate to move the operating lever (4) between the first and second positions and back to the first position in a single direction as required by claim 1. Figure 2 illustrates the journal (9) in a position against a cam that is radially inward of an inner surface of the servo-drive element (3). This movement between the inner surface of the cam and the inner surface of the servo-drive element (3) is only possible by pivoting of the operating lever (4) to an extent beyond that that could be caused by contact between the inner surface of the servo-drive (3) and the journal (9). Such pivoting movement cannot be provided by the motor (1). The operation of Kachouh stated by the Examiner is not supported by the description or by Figures 2 and 3.

For these reasons, the elements purported to be taught by Kachouh are not disclosed or suggested. In fact, as pointed out by Appellant, there exists significant evidence that Kachouh operates in a manner contrary to that proposed by Examiner. The Examiner's reading of Kachouh to fulfill the elements not taught by Rogers is only possible with the luxury of hindsight provided by one who has the benefit of appellant's disclosure. As appreciated, it is not permissible to use appellant's disclosure as a guide to selecting elements required to fill gaps in the prior art.

For the reasons set forth above, the rejection of claim 1 under 35 U.S.C. 103(a) is improper and appellant respectfully requests that the rejection be withdrawn.

Claim 24

Claim 24 recites a kit of parts for assembly including a pair of cams and a motor where only one of the pair of cams is assembled into to the actuator. Further claim 24 requires an actuator including a motor that is powered in a single direction to move the output member from the first output position to the second output position and is driven in the single direction to move the output member from the second output position to the first output position.

For the reasons set forth by Appellant in the argument regarding claim 1, the proposed modification of Rogers in view of Kachouh is improper because there is no motivation or suggestion, and because the proposed modification does not suggest or teach all of the limitations of claim 24. As discussed above, the combination of a unidirectional motor with the Rogers device would render Rogers unusable. Therefore there can be no suggestion or motivation to make the proposed combination.

Additionally, all the elements required of claim 24 are not present, as Kachouh operates in a manner inconsistent with Examiner's explanation. Further, Examiner's explanation of the operation of Kachouh and the reading and application proposed by Examiner is only possible through impermissible hindsight reasoning utilizing appellant's disclosure as a guide.

Further, none of the references teaches a kit of parts including a pair of cams, one of which is assembled into the actuator. The office action does not address this limitation and simply relies on the rejections and reasoning set forth in the rejection to independent claim 1.

Accordingly, the proposed modification of Roger's is improper because it would render the Roger's device unusable and would change the principle of operation. Further, the reading of

Kachouh by the Examiner not only fails to teach or suggest all the limitations required of claim 24, but could only be the result of impermissible hindsight use of appellant's disclosure as a guide to selecting elements required to fill gaps in Rogers.

Thus, for the many reasons set forth above, the rejection of claim 24 under 35 U.S.C. 103(a) is improper and appellant respectfully requests that the rejection be withdrawn.

CONCLUSION

For the reasons set forth above, the rejection of all claims is improper and should be reversed. Appellant earnestly requests such an action.

Respectfully submitted,

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Dated: February 15, 2005

CERTIFICATE OF MAIL

I hereby certify that the enclosed Appeal Brief is being deposited with the United States Postal Service as First Class Mail, postage prepaid, in an envelope addressed to Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on this 15th day of February, 2004.


Amy M. Spaulding

CLAIMS APPENDIX

1. An actuator comprising:
 - a motor;
 - a cam rotatable about a cam axis and drivable by the motor;
 - a cam follower;
 - an output member connected to the cam follower, wherein powered rotation of the cam causes the cam follower to be radially displaced relative to the cam axis to provide first and second output positions of the output member,
wherein the cam has a profile that includes a radial stop which, in conjunction with the cam follower, act as a detent so that the cam follower is capable of controlling a position of the cam, and
wherein the motor is powered in a single direction to move the output member from the first output position to the second output position and is driven in the single direction to move the output member from the second output position to the first output position.
2. The actuator as defined in claim 1, wherein the radial stop and cam follower act as a detent when the motor is not being powered.
3. The actuator as defined in claim 1, wherein external actuation of the output member causes rotation of the cam.
4. The actuator as defined in claim 3, wherein the radial stop and cam follower act as a detent during external actuation of the output member.
5. The actuator as defined in claim 1, wherein the cam has a first radial stop to stop the cam follower at a first radius and a second radial stop to stop the cam follower at a second radius, wherein the first and second radii are different.

6. The actuator as defined in claim 5 in which the cam has a third radial stop to stop the cam follower at a third radius, the first, second and third radii being different.

7. The actuator as defined in claim 5, wherein the cam has a plurality of first and second radial stops.

8. The actuator as defined in claim 1, wherein the cam follower is biased radially outwardly relative to the cam axis.

9. The actuator as defined in claim 1 in which the cam follower is biased radially inwardly relative to the cam axis.

10. The actuator as defined in claim 1 in which the cam follower is capable of moving between an radially outer position and a radially inner position and the cam follower is biased to a bias position radially between the radially outer and radially inner position.

11. The actuator as defined in claim 1, wherein the cam has a first radial stop to stop the cam follower at a first radius and a second radial stop to stop the cam follower at a second radius, wherein the cam profile between the first and second stops is profiled such that the cam follower moves to a radius which is different than both the first and second radii.

12. The actuator as defined in claim 1, wherein the cam profile includes a spirally inwardly curved portion.

13. The actuator as defined in claim 1 in which the cam profile includes a spirally outwardly curved portion.

14. The actuator as defined in claim 1, wherein the cam profile includes a first substantially radially orientated portion to allow the cam follower to move radially inwards or outwards relative to the cam axis.

15. The actuator as defined in claim 1, wherein the cam profile includes a return stop to prevent the backward rotation of the cam past the return stop.

16. (Cancelled)

17. The actuator as defined in claim 1, wherein a powered position corresponds to each of the output positions of the actuator.

18. The actuator as defined in claim 1 having an at rest position differing from the powered output position of the actuator.

19. The actuator as defined in claim 1, wherein the actuator is adapted for a vehicle door locking system to provide locking and unlocking of a vehicle door lock.

20. The actuator as defined in claim 19 further providing for superlocking of the vehicle door lock.

21. The actuator as defined in claim 1, wherein the output positions of the output member are located on an arc of a circle.

22. The actuator as defined in claim 1, wherein the motor is connected with the cam via a centrifugal clutch.

23. The actuator as defined in claim 1, wherein the motor is connected with the cam via a gear and pinion arrangement.

24. A kit of parts for assembly to provide an actuator, comprising:
a motor;

a pair of cams, wherein the motor is in driving connection with the pair of cams, and wherein the pair of cams is rotatable about a cam axis, each cam having a different cam profile and only one of which is assembled into the actuator;

a cam follower;

an output member, wherein rotation of the assembled cam causes the cam follower to be radially displaced relative to the cam axis to provide first and second output positions of the output member,

wherein the cam profile includes a radial stop which, in conjunction with the cam follower, act as a detent so that the cam follower is capable of controlling the position of the assembled cam, and

wherein the motor is powered in a single direction to move the output member from the first output position to the second output position and is driven in the single direction to move the output member from the second output position to the first output position.